102
103
105

R & M GRP 10

POWER SUPPLY BENCH

QUAN-TECH

QUANTITATIVE TECHNOLOGY

102
103
105

Quan-Tech Laboratories

BOONTON, NEW JERSEY

TENTATIVE INSTRUCTION MANUAL

MODELS 102, 103, 105

REGULATED POWER SUPPLIES

SERIAL 300 to _____

QUAN-TECH LABORATORIES

60 PARSIPPANY BLVD. BOONTON, NEW JERSEY

TELEPHONE DE 4-8500

REGULATED POWER SUPPLIES

MODELS 102, 103, 105

GENERAL

The Quan-Tech Regulated Power Supplies, Models 102, 103 and 105 are low voltage DC power supplies for use with transistors or in other applications requiring closely regulated DC voltage with low ripple content. The physical appearance, wattage output, and general circuitry is the same for all three models.

SPECIFICATIONS

Output:

Model 102 0-14 volts DC, 0-1 amp.
Model 103 0-30 volts DC, 0-½ amp.
Model 105 0-50 volts DC, 0-¼ amp.

The following specifications are common to the three models. (Unless otherwise stated.)

Regulation: ±0.1% or ±10 millivolts (whichever is greater) for 105 - 125 volts line supply or zero to full load.

Ripple: Less than 1 millivolt RMS, (2 millivolts RMS on Model 105.)

Internal Impedance: Less than 0.03 ohms, DC to 10KC, (Less than 0.05 ohm, DC to 10KC on Model 105.)

Overload Protection: An electronic circuit automatically limits the maximum load current under short-circuit or overload conditions. Fuses also are provided for protection against sustained overload or component failures.

Power Input: 105 - 125 volts, 50-60 cycles, 35 watts.

Dimensions: Height 8¼", Width 5", Depth 7 3/4" overall.

Weight: 7½ lbs.

Models 102, 103, 105

OPERATION

1. Place the Power Supply so that it has ventilation at the sides and back. Although the instrument will operate normally in ambient temperatures up to 40°C.(104°F.) it should, preferably, not be placed on top of other equipment that liberates a large amount of heat.

2. Plug the power cord into a source of 105-125 volts, 50-60 cycle, AC power.

3. Turn power switch to ON and advance the control knob fully clockwise. The red QTL emblem should glow and the meter should read slightly over full scale. (In Models 103 and 105 a slight click will be heard as the control knob reaches mid-range, at this point the main rectifier switches from mid-tap to bridge operation.)

4. Momentarily short-circuit the output terminals. The voltmeter reading should drop to zero and return to normal as soon as the short is removed.

MAINTENANCE AND REPAIR

1. Quan-Tech Power Supplies, Models 102, 103 and 105, require no routine maintenance. They should be removed from their cases only if repair is required.

2. The components in these instruments are standard commercial units. Replacement parts can be obtained from Quan-Tech Laboratories. They probably are also available at your local supplier.

3. To take off the case, place the instrument face down on the bench and remove the four screws on the back sub-panel.

4. To re-assemble the instrument in the case, it is convenient to place the instrument panel face down on small blocks. Be sure that the connecting cable is not obstructed.

5. In replacing components on the printed circuit board, the iron should be only hot enough to make a clean solder connection. Avoid pressure that might push the copper away from the board while hot.

CIRCUITRY

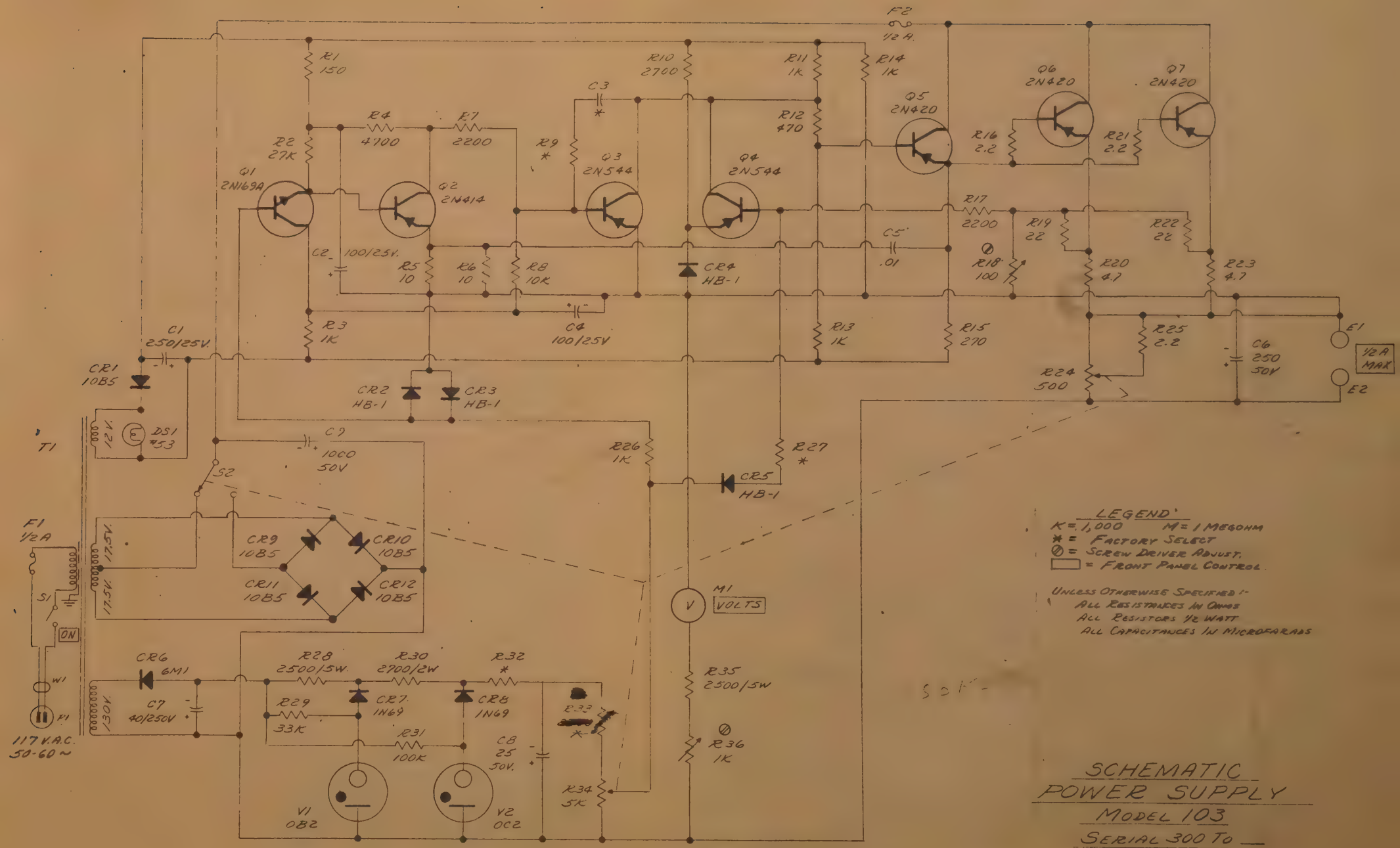
The Power Supply circuit comprises:

1. A main silicon rectifier.
2. A four-stage transistor regulator with an associated floating rectifier.
3. A gas-discharge reference with its rectifier.
4. An electronic circuit that limits the maximum output current to approximately 1.2 times the normal maximum value.

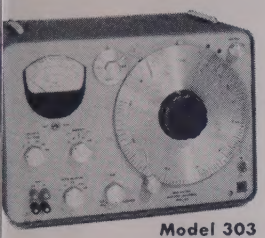
Complete overall degeneration of the regulator circuit provides close regulation of the output voltage and extremely low internal impedance to approximately 10 KC. Due to the frequency cut-off characteristics of the power transistors and the internal inductance of the wiring and components, the internal impedance rises from less than 0.03 ohm at 10 KC to a few ohms at 500 KC.

Fuses are provided in the transformer primary and in the collectors of the final transistors in the event of component failure. Under short-circuit conditions, the output current will drop to a value less than the normal maximum value.

Model	Collector Fuse	Line Fuse
102	1 amp. slow blow	½ amp. slow blow
103	½ amp. slow blow	½ amp. slow blow
105	¼ amp. slow blow	½ amp. slow blow


F2
1/2 A.
R1
150
R10
2700
R11
1K
R14
1K
C3
*
Q6
2N420
Q7
2N420
Q5
2N420
R4
4700
R7
2200
R12
470
R16
2.2
R21
2.2
R2
27K
R9
*
Q3
2N544
Q4
2N544
Q1
2N169A
Q2
2N414
R17
2200
R19
22
R22
22
C5
.01
R18
100
R20
4.7
R23
4.7
C2
100/25V.
R5
10
R6
10
R8
10K
CR4
HB-1
C4
100/25V
R3
1K
R13
1K
R15
270
C1
250/25V.
R25
2.2
C6
250
50V
E1
E2
1/2 A
MAX
R24
500
CR1
10B5
CR2
HB-1
CR3
HB-1
T1
DS1
#53
12 V.
C9
1000
50V
R26
1K
R27
*
CR5
HB-1
S2
F1
1/2 A
CR9
10B5
CR10
10B5
CR11
10B5
CR12
10B5
17.5V.
17.5V.
S1
ON
M1
V
VOLTS
W1
P1
117 V.A.C.
50-60 ~
CR6
6M1
R28
2500/5W.
R30
2700/2W
R32
*
R35
2500/5W
130V
C7
40/250V
R29
33K
CR7
1N69
CR8
1N69
R33
*
R31
100K
C8
25
50V.
R36
1K
R34
5K
V1
0B2
V2
0C2
LEGEND
K = 1,000 M = 1 MEGOHM
* = FACTORY SELECT
⊘ = SCREW DRIVER ADJUST.
▭ = FRONT PANEL CONTROL
UNLESS OTHERWISE SPECIFIED :-
ALL RESISTANCES IN OHMS
ALL RESISTORS 1/2 WATT
ALL CAPACITANCES IN MICROFARADS
SCHEMATIC
POWER SUPPLY
MODEL 103
SERIAL 300 TO ___
B-1423-B

QUAN-TECH



Model 303

Designed especially for applications in the fields of ultrasonics and noise spectrum analysis. Switch enables you to select any of four constant bandwidths. Two broadest positions are flat topped, vastly increasing the simplicity of tuning at high frequencies

Wave and Noise Spectrum Analyzer

Frequency Range: 30 cycles to 100 kc, ±300 cycle vernier
Voltage Range: 100 microvolts to 300 volts full scale.
Bandwidth: —3 db at 10 and 30 cycles round top; 100 cycles and 1 kc. flat top.
Monitor Output: Meter output and a voltage proportional to dial setting provide graphic display on oscilloscopes and X-Y recorders
Price: $1200.00

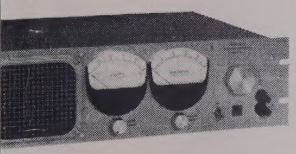
Enables rapid, accurate AC current measurements and observations of wave forms in transistors, magnetic amplifiers, small servo systems, etc. A clamp-on probe and an insertion probe are provided with each instrument.

Model 301

AC Microammeter

Sensitivity: 3 ua to 100 ma full scale (300 ua to 100 ma—clamp on probe).
Frequency: ±2% 50 ~ to 100 KC (±5% 100 ~ to 100 KC—clamp on probe).
Input impedance: 2 ohms—3 ua to 1 ma; negligible 300 ua to 100 ma.
Price: $290.00. Accessory 10 Amp. Probe $65.00.

INSTRUMENTS



Model 124

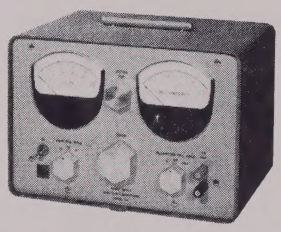
The 120 Series consists of a precision group of solid-state DC Power Supplies characterized by 0.01% regulation and low ripple. Outstanding features include output voltage and current metering, electronic circuitry protection against overload or short-circuits, preadjustment of current levels, and remote error sensing.

New!

The 120 Series Power Supplies

Model 121:	0.1—15 VDC, 0-5 Amps.	Price $475.00
Model 122:	0.1—36 VDC, 0-3 Amps.	Price $495.00
Model 123:	0-1—50 VDC, 0-2 Amps.	Price $510.00
Model 124:	0.1—50 VDC, 0-5 Amps.	Price $645.00

Model 104B is a versatile laboratory supply providing 0.1% regulation plus metered voltage and current. Models 101, 102, 103, 105, 112 and 113 (not shown) are compact lightweight supplies and include voltage metering. Regulation for Models 101 and 105 is 0.25%. Models 102, 103, 112 and 113 feature 0.1% regulation.



Model 104B

Transistorized Power Supplies

Model 101:	0-8 VDC, 0-2 Amps.	Price $195.00
Model 102:	0-14 VDC, 0-1 Amp.	Price $190.00
Model 103:	0-30 VDC, 0-½ Amp.	Price $190.00
Model 104B:	0-50 VDC, 0-1 Amp.	Price $375.00
Model 105:	0-50 VDC, 0-¼ Amp.	Price $205.00
Model 112:	0-14 VDC, 0-2 Amps.	Price $240.00
Model 113:	0-30 VDC, 0-1 Amp.	Price $240.00

POWER SUPPLIES

Model 151

Provides constant output current, variable over a wide range, and independent of the voltage drop across the load. Extremely useful for transistor applications, potentiometer noise measurements, strain gage applications, etc.

New!

Constant Current Supply

Output: 0.5 to 500 ma. DC in three ranges: 0.5 to 5 ma; 5 to 50 ma; and 50 to 500 ma. 20 volts maximum output voltage.
Power input: 105-125 volts, 50-60 cycles, 35 watts.
Price: $275.00

Products not listed above include Model 201 Decade Amplifier, Model 202 Isolation Amplifier, as well as instrumentation amplifiers, specialized noise test sets, custom power supplies and test equipment built to customer specifications.

We welcome requests for information regarding specific applications of Quan-Tech instruments.

Prices and specifications subject to change without notice.

Quan-Tech
LABORATORIES
Route #202, Boonton, New Jersey

Refer to Representative List on reverse side for additional information

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SALES REPRESENTATIVES

ARIZONA, Phoenix
Hyde Electronics Co.
2902 West Villa Street
APplegate 8-2266

CALIFORNIA, Pasadena
A-F Sales Engineering, Inc.
385 East Green Street
MUrray 1-5631

CALIFORNIA, San Francisco
Hugh Gray Co.
2166 Market Street
KLondike 2-1777

COLORADO, Denver 23
Hyde Electronics Co.
888 South Lipan Street
WEst 6-3456

FLORIDA, Clearwater
Maitland K. Smith Co.
117 N. Keystone Drive
39-8021

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Maitland K. Smith Co.
208 Fourteenth Street, N. W.
TRinity 5-8031

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Lightner Associates
6322 N. Milwaukee Avenue
SPring 4-1500

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JUniper 9-6554

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570 Hillside Avenue
HIllcrest 4-9410

MICHIGAN, Detroit 21
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10531 West McNichols Road
UNiversity 2-1573

MINNESOTA, Circle Pines
Pat Lind Electronics Co.
9781 Western Avenue
SU 4-3827

NEW JERSEY, Fair Lawn
L&M Associates
P. O. Box 641
DIamond 3-3070

NEW MEXICO, Albuquerque
Hyde Electronics Co.
5206 Constitution Avenue, N.E.
AMherst 8-1111

NEW YORK, Flushing 54
L&M Associates
38-25 149th Place
HIckory 5-0103

NEW YORK, Syracuse 2
Engineering Applications Co.
237 E. Genesee Street
HArrison 2-6797

NEW YORK, Yonkers
L&M Associates
P. O. Box 51, Centuck Station
WOodbine 1-5566

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Maitland K. Smith Co.
920 W. Hill Street
FR 6-5950

OHIO, Westlake
M. P. Odell Co.
26614 Center Ridge Road
TRinity 1-8000

OHIO, Dayton 6
M. P. Odell Co.
2676 Salem Avenue
CRestview 7-4441

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GErmantown 8-5666

PENNSYLVANIA, Pittsburgh 21
M. P. Odell Co.
750 Penn Avenue
FRemont 1-1231

TEXAS, Grand Prairie
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SUnset 4-6447

WASHINGTON, Spokane 4
Paramount Technical Agencie
S. 121 Monroe Street
TEmple 8-8918

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UNiversity 6-7367

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LOngacre 4-7585